volume 52:number 2
2019 fall

ROM

MAGAZINE *of the* ROYAL ONTARIO MUSEUM FALL 2019

US AND THEM

WHY HORROR IS THE GENRE OF OUR TIMES

p. 23

REAL-LIFE VAMPIRES

THE HUNTING HABITS OF THE VAMPIRE BAT

p. 28

BLOODSUCKERS

WORLD'S DEADLIEST PREDATOR: UP CLOSE AND PERSONAL WITH THE MOSQUITO p. 18

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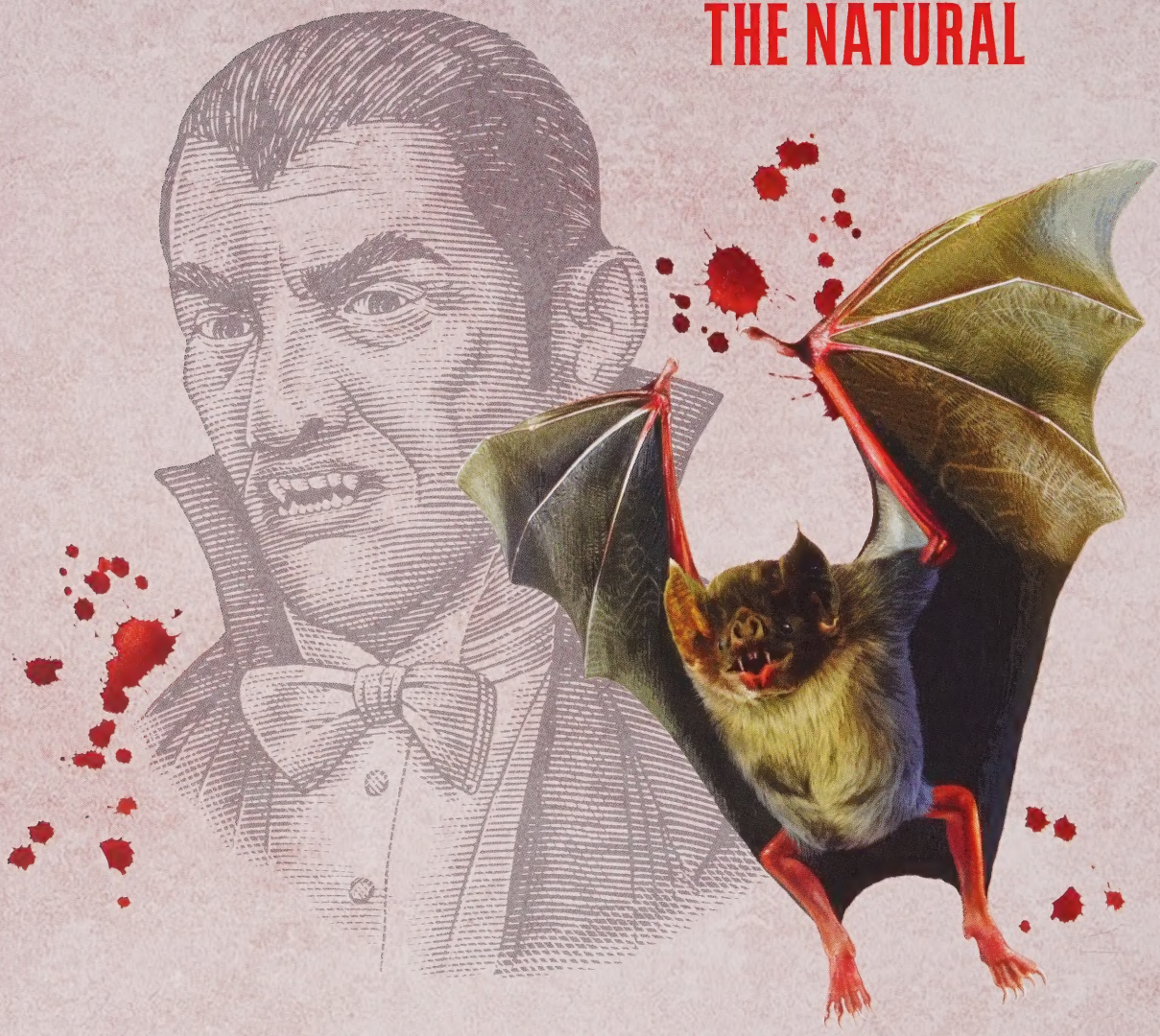
THE SUPERNATURAL
THE NATURAL



BLOODSUCKERS

LEGENDS TO LEECHES

Explore a ROM-original exhibition filled with amazing blood-feeding facts, folklore, immersive experiences and live specimens.

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Vampire: The legend of human vampires predates Bram Stoker, but the most famous incarnation of the legend is that of Count Dracula.
The ROM is an agency of the Government of Ontario.

ROM
ROYAL ONTARIO MUSEUM

ON THE COVER
There are 3,500 species of mosquitoes worldwide, with 82 species in Canada.

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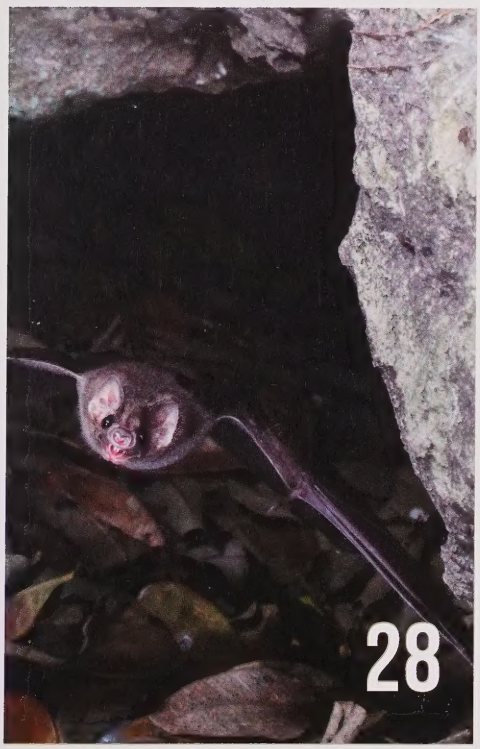

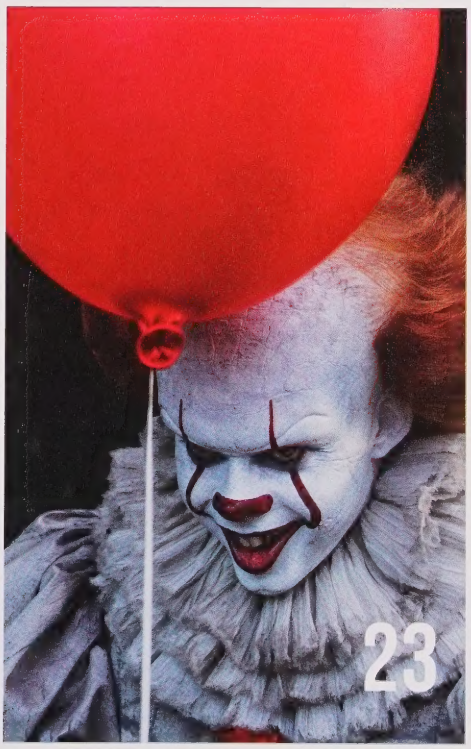

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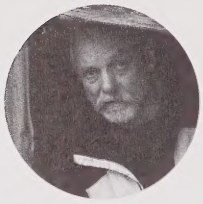

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Rydell is a Swedish scientist and nature photographer, working with bat ecology and conservation at Lund University. Jens has worked with bats and insects for 40 years, recently focusing on on the effects of wind power and artificial lighting.

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Published three times a year through the generosity of the Louise Hawley Stone Charitable Trust.

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Indexed in the Canadian Periodical Index and the Canadian Magazine Index, and available online in the Canadian Business & Current Affairs Database ISSN 1911-947X and through Thomson Gale.

Canadian Publications Agreement #40068986.

Subscription cost (three issues): $20 including HST (outside Canada add $8 for postage and handling); single copies $5.95 plus HST. Contact Julie Govan at julieg@rom.on.ca to purchase a subscription.

The ROM is an agency of the Government of Ontario.

ROM magazine is printed on paper from well-managed forests and is chlorine and acid free.

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EXCITEMENT INSIDE AND OUTSIDE THE ROM

Sharing our collections with audiences worldwide

Here at the ROM, we have committed ourselves to the ambitious yet essential goal of becoming ever more central to the life of our community. We strive to be a hub of cultural activity and achieved a major milestone in that journey with this year's realization of the Welcome Project, a five-year effort to increase openness and access to the Museum.

The Welcome Project culminated with the recent opening of the Helga and Mike Schmidt Performance Terrace and the Reed Family Plaza. Both outdoor spaces not only enhance the ROM's entrance and pedestrian experience on Bloor Street, but also create an inviting area for patrons and the public to meet, relax, and contemplate their Museum visit.

These initiatives complete the Welcome Project, which also includes the reopening of the heritage Weston Entrance on Queen's Park in December 2017 and the introduction of free access to the Daphne Cockwell Gallery dedicated to First Peoples art & culture in April 2018.

I am immensely grateful to the Bloor Street projects' lead donors Helga Schmidt and Nita and Don Reed, as well as Hatch, Nancy Lockhart and the late Murray Frum, Richard Wernham and Julia West, and Flavia Redelmeier, for their generous support.

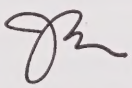
We are also expanding our reach in other ways, by sharing our collections with audiences worldwide. This past summer, more than 120 ancient objects from our Egyptian collections went on loan to China's Xuzhou Museum for the exhibition *Time Travel & Civilization Dialogue*. And our popular ROM-original exhibition *Christian Dior* is now on display at the China National Silk Museum in Hangzhou. Here in Canada, our critically acclaimed exhibition *Here We Are Here: Black Canadian Contemporary Art* had a successful run at the Montreal Museum of Fine Art and, most recently, at the Art Gallery of Nova Scotia.

This fall and into next year we have a wonderfully diverse slate of exhibitions coming up. Celebrating the intriguing science behind some of history's most enduring legends, *Bloodsuckers: Legends to Leeches* opens on November 16. This ROM-original exhibition explores the intricacies, evolution and interconnected world of blood-feeding organisms, and the folklore, legends, and pop culture they have inspired.

In the spring, we are so pleased to host the exclusive Canadian presentation of *Winnie-the-Pooh: Exploring a Classic*, an engaging and playful exhibition from the Victoria and Albert Museum in London, starting on March 7, 2020. Kids and grownups will be immersed in the world of this much-loved bear and his friends. With more than 200 artworks and objects on display, the exhibition explores the extraordinary partnership between author A.A. Milne and illustrator E.H. Shepard, and sheds light on how a bear from Winnipeg became the inspiration for an iconic character known throughout the world.

And on April 4, 2020, *The Cloth that Changed the World: India's Painted and Printed Cottons* brings the incredible story of Indian chintz alive from the ROM's own collections. The incredible, centuries-old tradition of printed and painted cotton textiles is being celebrated with the first original exhibition of its kind at the ROM in over 50 years.

Characters that have inspired imaginations for almost a century and textiles that have delighted the senses for millennia—these are just a taste of the exciting highlights ahead. We can't wait to enjoy them along with you.



JOSH BASSECHES
ROM DIRECTOR & CEO
ROYAL PATRONS CIRCLE MEMBER

SEE IT NOW

BLOODSUCKERS: LEGENDS TO LEECHES

DON'T MISS IT

IT'S ALIVE! CLASSIC HORROR AND SCI-FI ART FROM THE KIRK HAMMETT COLLECTION

COMING SOON

WINNIE-THE-POOH: EXPLORING A CLASSIC

what's on

events / free weekends / member previews

NOVEMBER, DECEMBER, JANUARY

Photo by Vincent Luk.

ROM DAYTIME

Discover ground breaking research and fascinating advances in art, culture, and nature as our experts share their cutting-edge work in this engaging series of daytime lectures.

THE MAKING OF *BLOODSUCKERS: LEGENDS TO LEECHES*

Sebastian Kvist

November 28, 2019
11:00 a.m. to 1:15 p.m.
Free. RSVP required.
ROM admission is not included.

Sink your teeth into *Bloodsuckers: Legends to Leeches* with ROM curator Sebastian Kvist as he explores the making of this ROM-original exhibition.

RECENT RESEARCH INTO CLOCKS FROM LOWER CANADA

Ross Fox

January 30, 2020
11:00 a.m. to 1:15 p.m.
Free. RSVP required.
ROM admission is not included.

Learn the history of these exquisite timepieces of Lower Canada with a fascinating look at the material culture of eighteenth century clockmaking.

Program Partner:
ROMFriends of the Canadian Collections

41ST ANNUAL BISHOP WHITE COMMITTEE WINTER LUNCHEON

FROM THE RED RIVER TO THE YELLOW RIVER: STORIES FROM THE FRONT LINES OF LAW AND BUSINESS

January 30, 2020
1:30 to 2:15 p.m.
Mandarin Ballroom
Doubletree by Hilton Hotel

$100/person (includes HST and gratuities), with tax receipt for maximum allowable portion.

David Livdahl has spent most of his 40-year legal career engaging with the economic rise of Japan, Hong Kong, and China. At this event, he will share some of his experiences, insights, and the lessons that he learned as a lawyer focused on the extraordinary Asian economies while living and working in Los Angeles, Tokyo, Hong Kong, and Beijing.

FRIDAY NIGHT LIVE

ART. CULTURE. NATURE. REMIXED.

October 4 to November 29
10:00 a.m. to 12:00 p.m.
$20 Adults | $15.50 Students/ Seniors | $5 Members

Dance, drink, and discover the ROM every Friday during the #FNLROM season. Satisfy your food cravings, while dancing the night away with sets from top DJ's and local artists.

Supporting Sponsor: Asahi Canada

ROM FOR THE HOLIDAYS

December 26, 2019 to January 5, 2020

With a variety of special exhibitions on display and day-long programming this winter, the Museum is the perfect holiday gathering place for family and friends of all ages.

ROM CONNECTS

FUNGIPEDIA: A BRIEF COMPENDIUM OF MUSHROOM LORE

November 17, 2019
2:00 to 3:00 p.m.
Free. RSVP required.
ROM admission is not included.

Lawrence Millman explores the roles fungi play in the Canadian North—how they benefit both taiga and tundra, as well as how they have been used by Indigenous peoples.

ANNUAL QUIMBY F. HESS LECTURE

TICKS AND TICK-BORNE DISEASES IN A CHANGING WORLD

November 23, 2019
1:30 p.m. to 2:30 p.m.
Free. RSVP required.
ROM admission is not included.

Discover the world of ticks with entomologist Nicholas Ogden, as he discusses their importance as blood-sucking parasites.

MEMBER EVENTS

EXCLUSIVE MEMBER PREVIEWS

Free with your membership

BLOODSUCKERS: LEGENDS TO LEECHES
Friday, November 15, 2019, 10:00 a.m. to 5:30 p.m.
Saturday, November 16, 2019, 10:00 a.m. to 12:00 p.m.

Discover the incredible diversity, evolution, and interconnected world of nature's vampires and the myths they have inspired. Bloodsuckers *is filled with amazing facts, larger than life installations and live specimens.*

WILDLIFE PHOTOGRAPHER OF THE YEAR
Friday, November 22, 2019, 10:00 a.m. to 5:30 p.m.
Saturday, November 23, 2019, 10:00 a.m. to 12:00 p.m.

The longest-running nature photography competition in the world returns to the ROM with all-new photographs showcasing the remarkable beauty of our natural world.

WINNIE-THE-POOH: EXPLORING A CLASSIC
Friday, March 6, 2020, 10:00 a.m. to 5:30 p.m.
Saturday, March 7, 2020, 10:00 a.m. to 12:00 p.m.

Experience the timeless and universal appeal of one of the most adored fictional characters of all time in this immersive and playful exhibition.

THE CLOTH THAT CHANGED THE WORLD: INDIA'S PAINTED AND PRINTED COTTONS
Friday, April 3, 2020, 10:00 a.m. to 5:30 p.m.

This exhibition considers India's chintz innovations and their influences on art, trade and industry.

Exhibition Patron:
ROM Friends of Textiles and Costumes, and Burnham Brett Endowment Fund

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Watch for your Member emails about exclusive Member previews, programs, and events. Visit **rom.on.ca/members/events**.

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NEW DISCOUNT OFFERS

DUKE OF YORK, THE ANNEX

ROM Members receive a 15% discount* on food and soft drinks (offer excludes alcohol) at the Duke of York, located just steps from the ROM. A valid ROM membership card must be presented at the beginning of your meal to receive the discount.

*Not valid with any other offer. Discount only valid at Duke of York, The Annex, located at 39 Prince Arthur Avenue. Offer valid until June 28, 2020.

TORONTO SYMPHONY ORCHESTRA

ROM Members can now enjoy select performances for up to 20% off. Watch your inbox for special offers from the Toronto Symphony Orchestra.

NATIONAL BALLET OF CANADA

ROM Members receive a **10% discount*** on regular priced 2019–20 Season tickets using promo code ROMMEMBER. Offer available online or at the National Ballet of Canada box office.

*Offer valid until June 2020. Offer excludes *The Nutcracker* and 2020 Gala. Discount is not available for seats in Zones A or H.

DISCOUNT WEEKEND

ONTARIO SCIENCE CENTRE

Saturday, February 8 & Sunday, February 9, 2020

ROM Members will save **50%*** off Ontario Science Centre general admission. Explore more than 500 interactive experiences in our exhibition halls, take in live science demonstrations, and more.

*Discount is valid only when valid ROM membership cards and photo ID are presented. Discount applies to general admission only and does not apply to guest privileges, parking, or IMAX films. Discount cannot be combined with any other discount offer.

MEMBER TOURS AND WALKS

Join fellow ROM Members on exclusive tours and walks on select days throughout the year. Space is limited to small groups to ensure your enjoyment, and registration is required. Members will be notified as tours and walks become available through Member emails.

GIVE THE GIFT OF A ROM MEMBERSHIP

MEMBERS SAVE*

Give the gift of wonder and discovery this holiday season. With a ROM membership, your friends and family will enjoy unlimited free admission to ROM galleries and special exhibitions, plus exclusive benefits all year long.

Gift purchases must be made by December 7 for delivery within Canada by December 21.

*Save $10 on a one-year ROM Individual Gift membership with promo code: **2019INDGIFT**. Save $15 on a one-year ROM Dual Gift membership with promo code: **2019DUALGIFT**. Save $20 on a one-year ROM Family Gift membership with promo code: **2019FAMILYGIFT**. Purchase gift memberships online at **rom.on.ca/membership** or call **416.586.5700**.

MEMBER HOLIDAY SHOPPING EVENT

SAVE 20%

Friday, November 22 to Sunday, November 24, 2019

Members save 20%

Welcome the start of the holiday season with the ROM's Annual Member Shopping Event. Members will receive a special discount of **20%** off regular priced merchandise.* This special Member offer applies at ROM Boutique and Exhibition Boutique. You'll be sure to find the perfect gift for any occasion or something special for yourself. Present your valid ROM membership card at time of purchase to receive your discount.

*Discount does not apply to already discounted merchandise, previously purchased merchandise, or to Kirk Hammett licensed products. This special 20 percent ROM Member discount cannot be combined with your regular ROM Member discount of 10 percent.

Thank you for your continued support.

As a ROM Member, you are an integral part of the social fabric that makes the ROM one of the world's leading museums of art, culture, and nature. Your support provides essential funding for educational programs, research, collections, community outreach, and operations.

Your membership helps support our access programs and open the doors of the Museum to underserved communities, as well as help fund our growing slate of original programs and exhibitions, which provide inspiring learning opportunities, diverse perspectives, and a home for lifelong learners.

Each year, our offerings continue to grow, providing visitors and Members with an unprecedented number of annual events, original exhibitions, and special programs to discover and enjoy. ROM membership continues to offer great value and is the most economical way to experience the Museum. Members get unlimited access to all galleries and exhibitions year-round.

DISCOVERY

BLAST FROM THE PAST

ROM palaeontologists discover *Cambroraster*, a voracious new Cambrian predator

BY **KATIE BAILEY**

Jean-Bernard Caron (right) studying *Cambroraster falcatus* at the ROM.

With its rake-like claws, pineapple-slice-shaped mouth, and enormous head, *Cambroraster falcatus* is a small but mighty marine animal that made a big splash when it debuted this summer.

The new species, discovered by ROM researchers, was revealed in the journal *Proceedings of the Royal Society B.* News of its discovery travelled quickly around the world, captivating news editors and readers alike with the highly detailed illustrations and colourful descriptions of the foot-long organism.

The discovery of *Cambroraster* is the result of the fieldwork at new quarry sites in Kootenay National Park, B.C., where ROM researchers have been uncovering more secrets from the Burgess Shale, the famous 506-million-year-old rock formation known for its extraordinary fossil preservation.

"We are really excited about this discovery," says Jean-Bernard Caron, the ROM's Richard M. Ivey Curator of Invertebrate Palaeontology and Assistant Professor in Ecology & Evolutionary Biology and Earth Sciences at the University of Toronto (U of T). "The large number of parts and unusually complete *Cambroraster* fossils preserved at the same place are a real coup, as they help us to better understand what these animals looked like and how they lived. *Cambroraster* clearly illustrates that predation was a big deal at that time, with many kinds of surprising morphological adaptations."

The study of the *Cambroraster* fossils was led by Joe Moysiuk, a graduate student based at the ROM, who led the study as part of his doctoral research in Ecology & Evolutionary Biology at U of T under Caron.

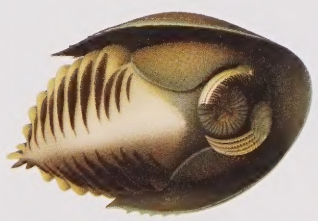
The discovery is significant for the light it sheds on the diversity of the earliest relatives of insects, crabs, spiders, and their kin.

Its specialized mouth apparatus is characteristic of the group *Radiodonta*, which includes the previously known apex predator *Anomalocaris*. *Radiodonta* is considered to be one of the earliest offshoots of the arthropod lineage, which today includes all animals with an exoskeleton, a segmented body, and jointed limbs.

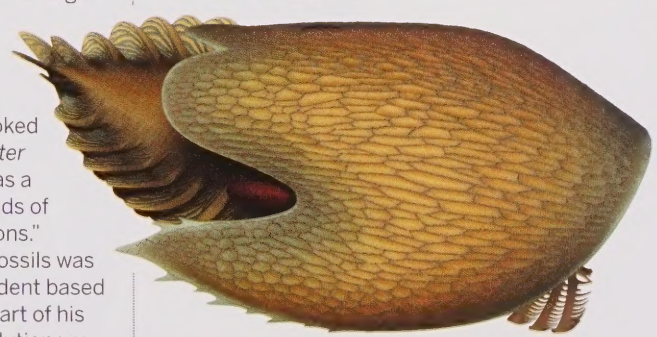
The name *Cambroraster* refers to the animal's remarkable claws, which bear a parallel series of outgrowths, looking like forward-directed rakes. "We think it may have used these claws to sift through sediment, trapping buried prey in the net-like array of hooked spines," explains Caron.

The second part of the species name, *falcatus*, refers to the shield-like covering over its head. "With its broad head carapace with deep notches accommodating the upward facing eyes, *Cambroraster* resembles modern, living bottom-dwelling animals like horseshoe crabs," Moysiuk notes. "This represents a remarkable case of evolutionary convergence in these radiodonts."

That same carapace also earned the *Cambroraster* its catchy nickname "spaceship," thanks to its otherworldly shape.



Reconstruction illustration of *Cambroraster falcatus*.



DISCOVERY

THE CAT IN THE "HAT"

ROM researchers find fossil of sabre-toothed cat in Medicine Hat, Alberta

One of the most "famous" predators of the Ice Age is now known to have lived in Canada, according to a new discovery made by scientists at the ROM and the University of Toronto (U of T).

A new study shows that *Smilodon fatalis*—commonly known as a type of sabre-toothed cat—lived as far north as Medicine Hat, Alberta. The find marks the northernmost record of the species by about 1,000 kilometres. Supersized cats like *Smilodon* went extinct at the end of the Pleistocene epoch, around 11,000 years ago.

"With this new information that *Smilodon* lived in Canada, we're adding more pieces to the puzzle of what Pleistocene ecosystems looked like, and how they changed over time," said Ashley Reynolds, the paper's lead author and a PhD candidate at U of T, who is based at the ROM. "This allows us to learn about how plant and animal communities have responded to changes in the past, and how they may respond to human-related changes today and in the future."

The discovery is based on a small bone that came from one of the cat's large forepaws and has been published in the *Canadian Journal of Earth Sciences*. The study also documents newly identified specimens of up to three other types of cat, including the American lion (*Panthera atrox*), a lynx or bobcat (*Lynx sp.*), and what may be the most southerly record of the cave lion (*Panthera* cf. *Panthera spelaea*), which was previously only known in North America from Alaska and the Yukon.

The cat fossils were collected in the late 1960s by U of T palaeontologist C. S. Churcher and colleagues in the area around Medicine Hat, Alberta. They were "rediscovered" in the ROM's collections by Reynolds, who was reviewing stored fossils and recognized the significance of the location where the *Smilodon* fossils had been first discovered.

"These bones, even though they are a tiny portion of the animal's skeleton, are enough to show that at least three large cat species lived in western Canada during Ice Ages," says Kevin Seymour, co-author and Assistant Curator at the ROM. "This sharply contrasts with today, when we have only one large cat in Canada, the mountain lion or cougar, which is smaller than the other big cats that roamed Canada during the Pleistocene."

While the mountain lion today hunts mainly deer, its larger Ice Age cousins, including *Smilodon*, would have hunted the large herbivores that were also present at the time, including camels, horses, giant ground sloths, and young mammoths and mastodons.

Illustration of *Smilodon fatalis*.

WORKSHOP

CHINESE OBJECT STUDY WORKSHOP

BY **KARA MA**

In August, the ROM played host to the Chinese Object Study Workshop, organized by Freer | Sackler, the Smithsonian's museums of Asian art. This workshop provides graduate students with an immersive experience in the study of museum objects. The ROM was the first institution outside the U.S. to host this workshop. Its vast and comprehensive collection of Chinese objects offered participants the opportunity to examine objects through an archaeological lens.

The five-day workshop was led by Dr. Chen Shen, Senior Curator of East Asian Art and Archaeology, along with Dr. Tianlong Jiao, Joseph de Heer Curator of Asian Art at the Denver Art Museum, and Dr. Haicheng Wang, Associate Professor of Art History at the University of Washington.

Approximately two hundred ROM objects were selected for study, spanning from prehistoric periods to the Qing dynasty. The participants engaged in critical analyses through object study and received collections-handling training.

Illustration by palaeoartist Henry Sharpe. © 2019 Henry Sutherland Sharpe.

EXHIBITIONS

WILDLIFE PHOTOGRAPHER OF THE YEAR

Winning photographs from the most prestigious nature photography competition in the world will be on display at the ROM. The *Wildlife Photographer of the Year* competition is now in its 55th year and attracts tens of thousands of submissions from photographers of all ages. Featuring 100 stunning photographs, the exhibition captures the striking wildlife, breathtaking landscapes, and the remarkable beauty and fragility of our natural world.

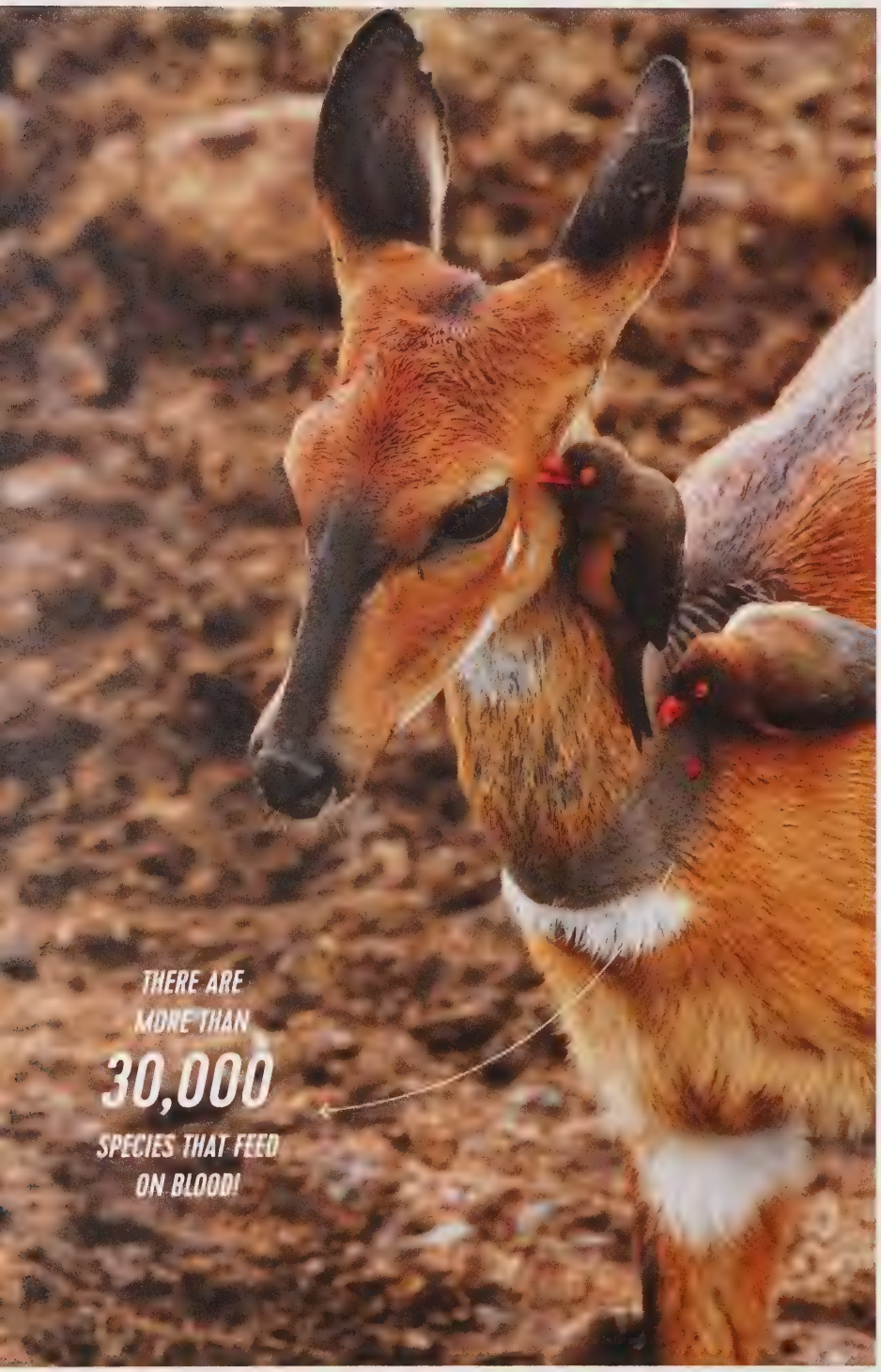
Lucky Break by Jason Bantle. The Canadian photographer spent years documenting this racoon as it raised several litters in the car, entering and exiting via a hole where the rearview mirror used to be.

November 23, 2019 to March 20, 2020
Wildlife Photographer of the Year is developed and produced by the Natural History Museum, London.

BLOOD TIES

New ROM-original exhibition explores the science and legends around bloodfeeding

BY SEBASTIAN KVIST



Red-billed Oxpeckers removing ticks from the back of a bushbuck.

Did you know that there are more than 30,000 species of animals that feed on blood? Aside from the usual suspects that are the mosquitoes, black flies, and leeches, the larger blood-feeding family distributed across the globe covers a range of creatures, including birds, moths, worms, and snails.

Not only do these animals contribute to the health of our ecosystems, but, for centuries, they have also captured the human imagination. Bloodsucking features prominently in storytelling, medicine, and even the fine arts. Count Dracula would likely not have achieved cult status had it not been for his voracious appetite for human blood.

The ROM-original exhibition, *Bloodsuckers: Leeches to Legends*, draws its strengths from both the nature and culture of bloodsuckers, blending the biology and evolution of blood-feeding animals with the legends they have inspired. The exhibition covers the role of bloodfeeders in medicine and how they continue to spark scientific discoveries today; it explores the concept of bloodletting—from hungry leeches feeding on patients in the name of health, to barbers and physicians tapping veins for vitality; and, explains ongoing research on bloodborne diseases.

Blood provides our bodies with oxygen, protects us from antibodies, acts as a waste management supplier, and helps regulate our body temperature. It is a fluid in high demand, and according to the American Red Cross, in the US, there's someone in need of blood every 2 seconds. But beyond its role as an essential body fluid, blood also serves as an essential source of nutrition for more than 30,000 species in the world today. Here, we take a closer look at some of the more famous bloodsuckers and how they are built to feed on blood.

Photo by Jim Richards.

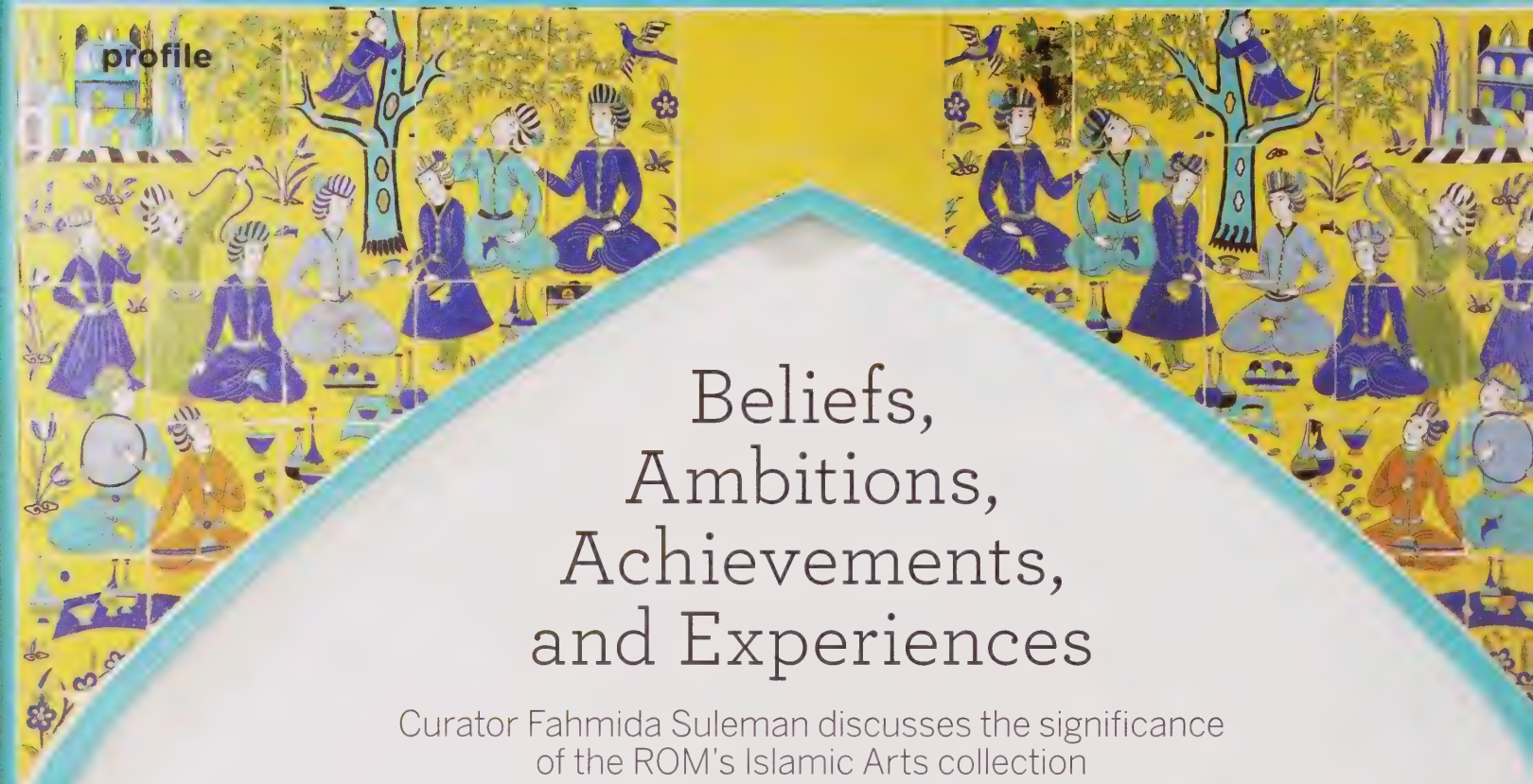
MOSQUITOES
Mosquitoes are the only biting flies in Canada that transmit disease to humans. They eat nectar and honey dew (a sticky substance excreted by certain insects). Only female mosquitoes feed on blood as the protein and iron in blood is used to produce eggs. They feed using a proboscis—a long, thin, straw-like structure—which contains numerous needles that are used to saw into the skin of their prey. About 3,500 species of mosquito are known worldwide.

BLACK FLIES
Fossil records show that black flies existed millions of years ago in the Mesozoic Era. The flies' first victims were likely warm-blooded theropod dinosaurs—the ancestors of modern birds. Nowadays, black flies prey on birds and mammals—warm-blooded vertebrates. Black flies have tiny hairs and sensory organs on their antennae that detect heat and chemicals from prey. Black flies feed with slashing mouthparts—blades to cut and a tube-like structure to suck.

LEECHES
Leeches are found on every continent. They live on land and in every major body of water—fresh and saltwater—including the waters of Antarctica. There are about 700 different species of leeches. Not all leeches are bloodfeeders. About two-thirds of the known species feed on blood. Some species use a proboscis to suck blood from beneath the skin. Others have serrated jaws that cut the skin to release blood.

LAMPREYS
Lampreys have remained relatively unchanged for 360 million years. Lampreys have cartilage but no bones and lack the jaws that most fishes have. Instead, they have round mouths that form a suction disc. Sea lampreys have teeth on their tongues. Their rasping tongues with lobes full of teeth scrape through skin and scales. Only 18 of the thirty-eight species of lampreys are bloodfeeding. The others get all the nutrients they need as larvae and don't feed at all as adults.

VAMPIRE BATS
Vampire bats are the only mammals that survive entirely on blood. Vampire bats must consume blood every night to survive. Bats that return to the roost without eating are fed regurgitated blood from other bats that found a meal. Vampire bat bites often go unnoticed. These bats are light (thirty grams) and their fangs are sharp to nip quickly. They can drink blood from a sleeping animal for over thirty minutes without waking it up.



Beliefs, Ambitions, Achievements, and Experiences

Curator Fahmida Suleman discusses the significance of the ROM's Islamic Arts collection

INTERVIEW BY **SHEEZA SARFRAZ**

After a 10-year stint at the British Museum, **Fahmida Suleman** is back home in Toronto as the ROM's new Curator of Islamic Art & Culture. Here, she shares with *ROM* magazine her plans and some of her favourite objects in the collection.

Welcome! What made you come back to Toronto, and to the ROM in particular?

Thank you, it's great to be back! I have been away from Toronto for a total of 24 years, so this was an exciting homecoming for me and my family. As an undergraduate in Islamic and religious studies at the University of Toronto's downtown campus in the early '90s, I took courses with inspirational curators at the ROM and dreamed of working here one day. I moved to the UK as a graduate student in Islamic studies and later focused my PhD research in Islamic art and archaeology at Oxford University. But the best education I received was from my travels to different countries and through the friendships I made with people from around the globe. For the past 10 years, I held an endowed position as Phyllis Bishop Curator for the Modern Middle East at the British Museum where I played a pivotal role in the planning, development and installation of the new Albukhary Foundation Gallery of the Islamic World. Here at the ROM, I have big ambitions for the collections, permanent display, and exhibitions and cannot wait to share them with audiences.

I also knew that the ROM has a thriving culture of philanthropy and I genuinely enjoy connecting with volunteers, donors, patrons, community groups, and policy makers. At the British Museum, I worked with a range of organizations from homeless shelters to the British army, discussing the richness and complexity of the Islamic world through the lense of museum objects. More than ever, museums have a major role to play today. Objects are the perfect starting point to foster open discussions and ask difficult questions, and museums are spaces where we can create social bonds in our diverse societies. In my mind, a healthy civil society is one in which art and culture is integrated within political and social discourse and the arts can contribute to social equality, sustainable living, and global pluralism. This is why I am working closely with the ROM Governors to permanently

Photo of Fahmida Suleman by Wanda Dobrowlanski.

endow the Curatorship of Islamic Art & Culture, so that we can provide even more exciting opportunities to build bridges and encourage dialogue at a particularly important time in our country's—and indeed our world's—history.

What can the ROM's Islamic objects tell us about cultural heritage, past and present?

The ROM stewards Canada's largest collection of over 10,000 objects, textiles and archaeological finds from across the Islamic world, reflecting the artistic and technical achievements of diverse cultures and civilizations spanning the 7th to the 21st centuries. Not only are many of these objects and artifacts aesthetically engaging, they also tell us compelling stories about people's beliefs, ambitions, achievements, and experiences over the course of 1,400 years following the birth of Islam in 610 CE. I have also begun to expand the historic collections by acquiring modern and contemporary works of art in order to tell more recent, and sometimes politically charged, narratives that reflect the lives of individuals, communities, and entire nations in today's world.

How can collections such as these help us build bridges between cultures?

The ROM is a public space that fosters dialogue and engagement among people of all backgrounds and beliefs, and I think these objects speak to our common human experiences and concerns and not only our differences. The term Islamic art is misunderstood if interpreted purely as religious art for Muslims. The ROM's Islamic collections not only highlight the diversity of Muslim peoples across the world and through the ages, they also represent the material culture of Jewish, Christian, Zoroastrian, Hindu, and other faith traditions in geographic regions where Islam was the state religion. For example, I would love to curate a show about food culture across the Islamic world and through the ages. A topic like that could address everything from medieval cookbooks and rituals of hospitality, to the spread of coffee culture, or food memories of newcomers to Canada. The public program would also allow us to engage with diverse communities across the Greater Toronto Area and bring in new audiences to the Museum.

Do you have any favourites in the collection?

I have many favourites in the Islamic collections, some of which are currently on view in the Wirth Gallery of the Middle East, while others are hidden treasures in our storerooms, waiting to be researched and exhibited. For example, I love the unglazed ceramic figurine of a female musician on show in the gallery. Made in medieval Iran, she looks like she's about to play her lute and it reminds me of the importance of music and poetry in the arts of the Islamic world and that I should find a way to introduce music and song in the gallery for our visitors. Hidden treasures in the Islamic holdings include a large collection of silver jewellery made by semi-nomadic Turkmen people of Iran and Central Asia. Dating from the late–19th and early–20th centuries, each piece is expertly crafted and many have gilded decoration and are inlaid with carnelians. Usually made for bridal dowries, the jewellery represents a woman's personal wealth, are markers of her tribal identity and provide her with amuletic protection.

What projects are you currently working on? Is there anything that our Members can look forward to seeing in the upcoming months?

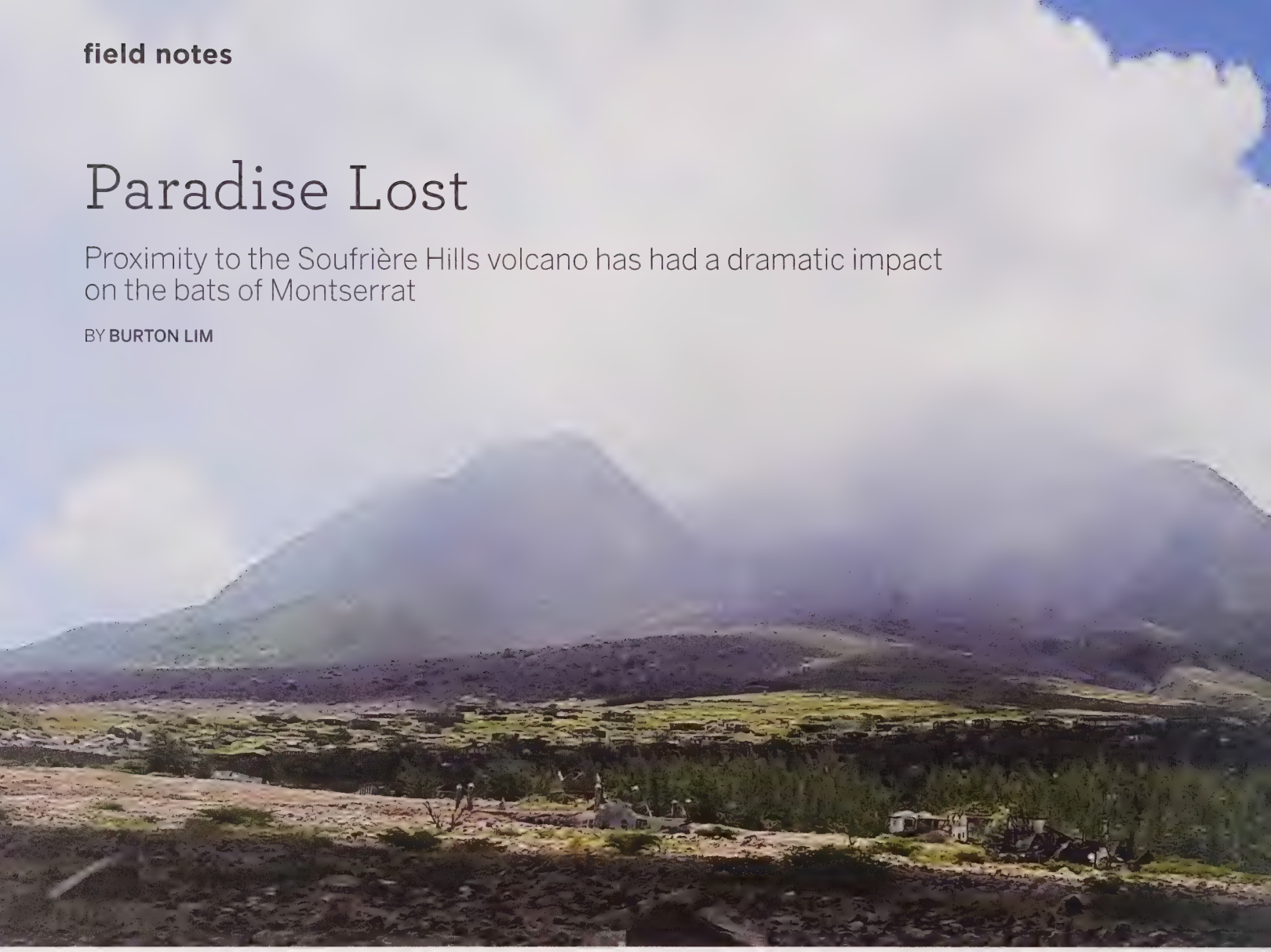
Since I arrived in January this year, I have been focusing my energies on a major forthcoming exhibition that I am co-curating with three of my colleagues at the ROM about the world of the Indian Ocean from pre-history to the present day. We are finding exciting and innovative ways to integrate objects from the ROM's Art & Culture collections with our Science & Nature collections for this show in order to create a truly unique experience for our visitors. Only the ROM can tell a story that begins with the tectonic shifts of the continents and the creation of the Indian Ocean right up to our present-day concerns about human impact in the region. Visitors can expect to see everything from jaw-dropping Indian gemstones and exquisitely carved Swahili doors to rare double coconuts from the Seychelles and lemurs from Madagascar.

I am also involved in the creation of a cultural hub called the Islamic Art and Material Culture Collective. Through this unique initiative, the ROM will partner with the University of Toronto and the Aga Khan Museum to host public workshops, lectures, projects and student fellowships focusing on the arts of the Islamic world. With the establishment of the Aga Khan Museum, several teaching positions and the sheer number of contemporary artists and performers connected to the region, Toronto now has an unprecedented critical mass of institutions and individuals engaged and interested in the arts of the Islamic world in the broadest sense. This hub will hopefully become a focal point to connect us all together within the GTA and across Canada. ◘

Paradise Lost

Proximity to the Soufrière Hills volcano has had a dramatic impact on the bats of Montserrat

BY **BURTON LIM**



The Caribbean may conjure up images of sun, sand, and tropical getaways, but this seeming paradise exists under the constant threat of natural disasters such as hurricanes, earthquakes, and volcanoes.

This is certainly the story in Montserrat—aka the "Emerald Isle"—where Beatles producer Sir George Martin opened an AIR Studios facility for artists including The Police and Dire Straits to record in the late 1970s and 1980s. The studio was destroyed by Hurricane Hugo in 1989, and the island was still recovering when the long-dormant Soufrière Hills volcano erupted in 1995. The volcano's fifth and most recent phase of activity occurred in 2010, leaving the southern part of the country—including capital city Plymouth—covered in lava and ash.

In addition to the devastating human toll—half the population of 10,000 left the country, most settling in Britain—the southern part of the island remains an ecological wasteland designated as an exclusion zone with restricted access. But I was there in May 2019 as part of a four-person biodiversity survey team that also included South Dakota State University's Dr. Scott Pedersen, who has been conducting fieldwork on the island since 1994.

Bats are the only mammals native to Montserrat, and Pedersen has seen the effects of volcanic activity on the fauna and flora over the past quarter century. We observed a few fruit-eating bats in three species with combinations of teeth worn down to nubs and splotchy hair loss on their bodies. These are sublethal pathologies rarely seen in healthy populations, attributable to physiological stresses associated with ingesting ash-covered fruit.

Volcanic activity also caused the loss of bats' natural habitats—such as forests and caves for roosting and feeding—that were incinerated or buried in the ash and lava debris. There are, however, some suitable places for bats to live in the intact north. We estimated about 5,000 Antillean fruit-eating bats (*Brachyphylla cavernarum*) in the largest-known cave and maternity roost in Montserrat, which is consistent with previous counts. However, an adjacent cave normally occupied by males was empty.

A few days earlier, along with officials from the Department of the Environment, we surveyed for bat roosts in the old Lee's neighbourhood in the evacuation zone west of the volcano. A bachelor roost of Antillean fruit-eating bats was found in an

Photos courtesy of Burton Lim.

Left: A cloud of sulphuric gases surround the volcano, with the old capital city buried in pyroclastic flow in the foreground.

Above right: With only the second floor visible, the Flora Fountain Hotel in Plymouth is encased in ash and lava.

Below right: Antillean fruit-eating bats roosting in an abandoned house in the evacuation zone.

THREE SPECIES OF FRUIT-EATING BATS HAD COMBINATIONS OF TEETH WORN DOWN TO NUBS AND SPLOTCHY HAIR LOSS ON THEIR BODIES

abandoned house previously occupied in 2009 and 2011 by smaller insectivorous free-tailed bats (*Tadarida brasiliensis*). The plan was to attach radio transmitters to some of the bats to track where they fly to forage for food and to roost, but scheduling conflicts reduced our expedition team and we are hoping to try this during a follow-up trip next year.

Although no eruptions have occurred in nearly 10 years and the official Hazard Level has remained low at Level 1 for the past five years, sulphuric gases are being emitted, and slow ground deformation is ongoing. This indicates that the volcano still has a pressurized magma system that has the possibility of renewed activity. The Soufrière Hills volcano is far from being dormant, but is not considered an imminent threat.

This lull in activity allows scientists to study the effects of volcanoes on island ecosystems such as Montserrat, which still harbours natural habitats adjacent to the scarred landscape caused by the recent eruptions. Bats are important seed dispersers and flower pollinators, so they will be important contributors to the reappearance of forests in the southern part of the island. ◘

BURTON LIM is Assistant Curator in the Mammalogy Department.

Casas Grandes Ceramics

Outstanding collection comes out of the vaults for the second time in nearly 100 years

BY APRIL HAWKINS

For only the second time in nearly 100 years, the ROM's outstanding collection of Casas Grandes ceramics is out of the vaults. This massive collection consists of 400 exceptional polychrome ceramics and effigy vessels dating from 1150 to 1450 CE from the important type site of Paquimé, in the Casas Grandes Valley of northern Chihuahua, Mexico. Charles Trick Currelly, the ROM's director in 1921, acquired this collection from Edward Ledwidge, a Texas railroad agent and major collector of Mexican antiquities. Each of these ceramic vessels was coil-built and meticulously painted by the hand of a master potter.

Perhaps most astonishing is that nearly all of these ceramics are complete vessels. While it is rare to have a complete ceramic vessel that is 600–800 years old, in this collection we have 400 from one site. The site of Paquimé is most famous for these exceptional ceramics, but it is also known for the impressive multi-level pueblo architecture and for the unique practice of breeding scarlet macaws in the semi-arid desert.

The Museum's current technician for this collection, April Hawkins, has now brought 200 of these evocative vessels out of the vaults to be photographed, researched, and catalogued for the ROM's online eMuseum—an initiative generously supported by Nancy and Jon Love. Readers can view the collection online, as the project progresses over the next several months, at **collections.rom.on.ca**. ◘

APRIL HAWKINS is a technician in the Archaeology of the Americas Department.

Photo of April Hawkins by Wanda Dowbrowlanski. ROM HMC79.

A Rare Example of Byzantine Art

A ivory panel, made for the Imperial Court, on display at the ROM

BY **PAUL DENIS**

Byzantine art flourished once again, after Iconoclasm ended in 843 CE, the period that banned the use of all figural images in religious art for about a century. This blossoming of the arts began in Constantinople under Basil I, the first Macedonian emperor, and the era is referred to as the Macedonian Renaissance after the ruling dynasty (867–1056 CE). These emperors were both scholars and patrons, who reintroduced images from the life of Christ and the saints into all facets of the arts, including works in precious metal and ivory. Some of the highest-quality ivory carvings were produced during a relatively short period of time of about 100 years, spanning the 10th century.

The ROM is fortunate to receive, on long-term loan, a very rare and exquisite double-sided Byzantine ivory panel, crafted during this golden era around 950–1000 CE. One side is carved with a full-length figure of Saint John the Evangelist, with an accompanying Greek inscription *o a(gios) ioannes* (St. John). The other side bears three medallions, each enclosing a bust of a male martyred saint and accompanying Greek inscriptions identifying them respectively as *o a(gios) nountios* (St. Nountios, an enigmatic name), *o a(gios) eugeneos* (St. Eugenios) and *o a(gios) orentiu* (St. Orentios). Although the hinges are lost, it is clear from a comparison with surviving ivory carvings that it would originally have formed the left-hand wing of a triptych, likely with the figure of St. John being on the outside and the three medallions with saints on the inside.

St. John is depicted as the elderly—balding and bearded—visionary evangelist. He stands frontally with his haloed head in three-quarter view. He holds a book of scriptures in his left hand and blesses with his right. His elaborate liturgical vestments, worn in layers, are beautifully rendered in deep and soft overlapping folds. Although carved on a small scale, St. John has a statuesque quality with tall, slender proportions.

On the opposite side, the busts of the three martyred saints are shown frontally with their nimbed heads in three-quarter view. Saints Nountios and Eugenios are bearded and look older than the clean-shaven Orentios. Each saint is holding a small cross in their right hand, which signifies their martyrdom. The trio is shown in splendid courtly attire wearing a long cloak decorated with an embroidered panel over a long-sleeved tunic with beaded cuffs. Their garments are richly detailed with crisscrossing folds, and a rosette-shaped fibula fastens each cloak over their right shoulders.

Great care was taken in the very fine modeling of their individualized facial features, locks of hair, and beards, giving each of the four saints a distinct character and personality.

The aesthetic appeal and first-class quality of workmanship suggest that the ROM's panel was carved in a workshop that was employed largely to serve the imperial court in Constantinople. Because of their refinement and elegance, Byzantine ivories of the Macedonian Renaissance were highly sought after even outside the Byzantine Empire. Their influence was widespread, inspiring both large- and small-scale sculpture in Western Europe and the Orthodox countries. ◘

PAUL DENIS is Assistant Curator of the Greek, Etruscan, Roman, and Byzantine Collections at the ROM.

THE DEADLIEST ANIMAL ON THE PLANET

THE BIOLOGY OF MOSQUITOES AND THE DISEASES THEY TRANSMIT

By ANDREA BOGGILD

Mosquito fogging in countryside of Penang, Malaysia.

Mosquitoes are a type of flying insect that people love to hate. They are annoying pests, buzzing in our ears as we try to fall asleep on warm summer nights, and their bites leave us itchy, spotty, and swollen. What's more, mosquitoes are considered the deadliest animal on the planet due to the infectious diseases they spread, killing hundreds of thousands more people in the world each year than all other deadly animals, such as snakes, sharks, and hippos, combined. At roughly 3,500 species with a near worldwide distribution, mosquitoes are one well-adapted, bloodsucking global predator. The life of a mosquito and its proliferation are dependent on only a few factors: a warm moist environment; a food source—nectar for the males, blood for the females; and a source of standing water in or near which the female can lay her eggs. Mosquitoes are also highly mobile: not only can they fly short distances, but they can also be carried hundreds of kilometres on wind currents and thousands of kilometres in cargo holds, shipping containers, and our very own holiday luggage. Since their needs are few, wherever they land, they have a record of success for populating new communities, and this—among other attributes of evolutionary "fitness"—has established mosquitoes as one of the greatest human foes with which we have ever shared our planet.

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MOSQUITO EVOLUTION AND BIOLOGY

Based on the fossil record, it is thought that mosquitoes evolved from other flies approximately 80 million years ago in the Cretaceous period. As popularized by the movie *Jurassic Park*, scientists have indeed discovered mosquito-like insect parts encased in amber from that time period. Although they emerged such a long time ago, modern mosquitoes are quite different from their ancestors; due to a process known as "microevolution," in which gene expression changes over time within a species rather than above a species, present-day mosquitoes continue to change at a rapid rate compared to, say, mammals, or even other "arthropods" like spiders. Mosquito biology that facilitates such microevolution includes a rapid life cycle, during which mature adults can develop over only a few days from the time of egg hatching, a high degree of variable gene expression, the ability to move around easily, and a large number of offspring produced by each female mosquito. This propensity for rapid change has enabled mosquitoes to evolve into the apex predators that they are today. Their incredible adaptability allows them, depending on the species, to breed in almost any type of standing water—whether cool or warm, brackish or fresh, deep or shallow, polluted or clean—and to occupy all continents except Antarctica. Their adaptability also allows them to "hibernate" over winter (by entering a dormant period called "diapause"), when needed, and to evade our ability to control their ranks chemically via their elaboration of resistance mechanisms against mosquito repellents and insecticides. Mosquitoes succeed best when provided a hot, humid environment, with a readily available food source and water, and due to humanity's collective global impact—the Anthropocene is so named for a reason, after all—modern-day mosquitoes want for nothing.

After taking a meal of blood from an animal, the female mosquito will lay its eggs in or beside water. Larvae hatch out of eggs after a couple of days and then mature to pupae, from which adult mosquitoes emerge. The entire process may take up to a month, but, on average, this "generation time" is about two weeks, with some species maturing in as few as four days. The generation time of many mosquitoes is dramatically affected by air and water temperature. For example, in *Aedes albopictus*, the Asian tiger mosquito, a 10° C increase in ambient temperature shortens the adult development time by 40–50 percent (from 15 to 19 days down to 8 to 11 days). Unprecedented human mobility, globalization of trade and transport, and climate warming have all culminated in the ever-increasing competence of mosquitoes to occupy new environmental niches. Originally spread by shipments of used tires, the Asian tiger mosquito is now found throughout the Americas, including parts of southern Canada. What's more, seasonal spikes in mosquito populations across the globe, which follow typical patterns of precipitation (for example, rainy seasons), are dramatically affected by extreme climatological events such as hurricanes, cyclones, and flooding—the occurrence of which is somewhat unpredictable but undoubtedly increasing in our warming world. Such events are known to lengthen mosquito breeding season and lifespan, and increase mosquito population density. Thus, it is not

A rapid life cycle has enabled mosquitoes to evolve into the apex predator they are today.

simply the catastrophic economic, built-environment, and human-capital losses related to climate-associated geophysical disasters that justify climate change as one of the United Nations' sustainable development goals (https://sustainabledevelopment.un.org/sdg13) but also the downstream health effects, many of which are directly related to diseases spread by mosquitoes.

MOSQUITO-BORNE DISEASES

Only a small proportion of the approximate 3,500 mosquito species transmit infections to humans, with the most infamous species belonging to the *Anopheles* and *Aedes* groups. Collectively, mosquito-borne diseases exact a punishing economic impact on areas of the planet least situated to weather such losses. Malaria—a parasitic infection transmitted by the bite of an infected female *Anopheles* mosquito—kills close to 500,000 people each year, with more than 90 percent of the 220 million annual cases situated in sub-Saharan Africa, and 60 percent of deaths occurring in children under the age of five. Due to the biting proclivities of *Anopheles* mosquitoes, most transmission occurs at night, so sleeping under an insecticide-treated bed net is an effective strategy to interrupt transmission. However, like many public health interventions in equatorial low- and middle-income parts of the world, bed-net usage is challenged by logistics (for example, supply chain, distribution, and accessibility of at-risk communities, particularly during rainy season), cost, and socio-political factors.

Dengue, one of the "arboviruses"—so named because it is a virus that is "arthropod borne"—is transmitted to people by the day-biting *Aedes* mosquitoes, and many regions in the tropics are presently in the grip of a large-scale epidemic, which is showing no signs of abating. In some areas of the tropics with entrenched urban transmission of dengue, thousands of cases are being diagnosed every week; recent locally acquired cases have even been detected in more northern areas not known to portend risk, including France, Spain, and Florida. In addition to spreading dengue, *Aedes* mosquitoes can also transmit both the arthritis-causing Chikungunya virus and Zika virus, which can lead to birth defects and neurological problems in infants born to infected mothers, as well as miscarriage and stillbirth.

While malaria and dengue are major mosquito-transmitted killers in the tropics and subtropics, other serious infections can be spread by mosquitoes in temperate, cooler areas of the planet. In Canada, the most common human infection spread by mosquitoes is West Nile virus, which typically causes a flu-like illness when symptoms occur but can, more rarely, affect the brain and nervous system. West Nile virus is spread to people by *Culex* mosquitoes, which can bite at any time of the day and acquire the infection themselves from infected birds. Due to our harsh winter climate, West Nile virus is rarely transmitted in Canada outside of the peak mosquito months of May to October. However, like all mosquito-transmitted infections, West Nile-virus frequency and seasonality may be greatly affected by a warming climate and extreme weather events.

Yellow fever, another *Aedes*-transmitted virus, struck down more soldiers in the southern United States during the American Civil War than the war itself

Mosquito-borne diseases have shaped the landscape of human history by influencing the outcome of battles and wars, conquests and attempts at colonization, and infrastructure projects of global importance. They—or more precisely, their consequences—are captured in the ancient scrolls and papyri of Egypt, and in the art and literature of Greek writers and philosophers such as Homer and Aristotle. Malaria, specifically, is thought to have caused the fall of the Roman Empire. Yellow fever, another *Aedes*-transmitted virus, struck down more soldiers in the southern United States during the American Civil War than the war itself and was single-handedly responsible for decimating legions of workers over the decades-long construction of the Panama Canal. Closer to home, the construction of our very own Rideau Canal in the early 1800s was beset by mosquito-borne disease, with deaths attributable to malaria vastly outnumbering those related to occupational accidents.

In the late 19th and early 20th centuries, emerging knowledge about the role mosquitoes played in the spread of diseases like malaria and yellow fever, coupled with industrialization and urbanization, led to the deployment of highly effective control measures, including better housing, widespread use of insecticides, destruction of mosquito habitat, and treatment of people with the infections, all of which interrupted transmission. Thus, malaria was wiped out in Canada by the mid-1900s, but since we still have mosquitoes in our country, there is the potential for it to return. The same is true for dengue: the more the climate warms, the more hospitable Canada becomes for the *Aedes* mosquito; just one bite of one person returning from the tropics with dengue fever could theoretically establish the infection in new *Aedes*-mosquito populations in Canada. Entomologists and public health scientists have therefore developed screening programs through which they track, trap, and test Canadian mosquitoes for infections that could become either established or re-established after having been previously eradicated. Unfortunately, the insecticides used in the days of the Panama Canal construction are becoming increasingly ineffective due, once again, to the great microevolutionary capacity of mosquitoes. Their rapid adaptability allows them to express mutated →

genes that confer resistance to insecticide (pesticide) chemicals. Scientists, in turn, have had to up their game in the fight for mosquito control, even turning to laboratory-based genetic modification and then release of, say, sterile mosquitoes in order to reduce breeding populations. Despite these technological advances in the face of rapid mosquito evolution, the major fundamental pillar of mosquito control, which enabled completion of the Panama Canal and eradication of malaria in Canada, continues to apply: destruction of mosquito habitat (that is, "draining the swamp") to reduce breeding and mosquito population growth. Canadians—and urban dwellers, in particular—must remain vigilant in this regard and clear our local environments of the standing water necessary for propagating generation after generation of mosquito.

PROTECTING YOURSELF AND YOUR FAMILY FROM MOSQUITO-BORNE DISEASES

The approach to protecting oneself from infections that are spread by mosquitoes should involve multiple strategies aimed at interrupting the mosquito life cycle, avoiding mosquitoes when possible, and—when impossible—repelling mosquitoes to reduce bites. Interrupting the mosquito life cycle rests mostly on removing breeding sites, notably, standing water. Common sources of standing water in urban environments include flowerpots and bird baths, as well as household items such as buckets and cans. Ponds, reservoirs, and flooded drainage ditches may serve as breeding ground in rural areas. Strategies to avoid mosquitoes and their bites include minimizing outdoor exposure from dusk to dawn during peak months, screening on windows, netting around bedding and doorways, and long-sleeved clothing and hats. If exposure is unavoidable, use of a mosquito repellent containing DEET (up to 30 percent, depending on age) or icaridin (20 percent in all persons above six months of age)—both of which have an impeccable record of safety and efficacy—is advisable. While most herbal and other repellent formulations marketed as "natural" have poor efficacy in scientific studies, formulations of lemon eucalyptus oil can offer some limited protection similar to that of 10 percent DEET. Safe and effective repellents are sold in most pharmacies, grocers, and outdoor stores in Canada.

MOSQUITO BITE AVOIDANCE BY AGE

Repellent	6 mos–2 yrs	2–12 yrs	>12 yrs
DEET	10% 1x day	10% 3x day	20–40% every 4–6 hrs
Icaridin	20% every 6–8 hrs	20% every 6–8 hrs	20% every 6–8 hrs

Note: Lemon eucalyptus oil protects for 2 hours as does 10% DEET.

Left: Common mosquito repellent formulations and their recommended application by age.

Top: Mosquitoes at dusk.

MOSQUITOES AND US

Mosquitoes constitute a group of rapidly evolving, highly adaptable, and tiny but lethal human predators, the ranks of which continue to increase and encroach on new territory due to the intersection of climate, urbanization, and inherent mosquito biology. Having few predators themselves—dragonflies and certain fish being the principal mosquito eaters—and the ability to evade our chemical control tactics through genetic resistance, mosquitoes will continue to not only tax our collective cognitive resources but also spread diseases in catastrophic proportions, often to populations residing in resource-constrained environments with limited potential for effective and sustained mosquito control. And so perpetuates the cycle of this minuscule bloodsucker, shaping the course of our history and our future. ◘

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HOW TO SEE IT

IT'S ALIVE
ON UNTIL January 5, 2020
Roloff Beny Gallery

DESIRE FEAR CURIOSITY

WHY HORROR IS THE GENRE FOR OUR TIMES

BY S. TRIMBLE

A woman in a red jumpsuit opens her mouth to speak. Her voice is strained, every word an act of will. "Once upon a time, there was a girl, and the girl had a shadow." Jordan Peele's *Us* (2019) begins with a loving family being terrorized by their doppelgängers. The shadows are rising, the speaker is saying. And she's one of them. But the difference between the girl and her shadow, us and them, is less stable than it seems. Horror thrives on this instability. We hate-love our monsters. We're terrified-exhilarated by the collapse of the norms we live by. We're rooting for the girl ... and the shadow? Ambivalence: it makes room for imagining remaking the world in the wake of the monster, room for imagining an Us that isn't violently opposed to a Them.

Peele's critically acclaimed horror films—*Get Out* (2017) and *Us*—are part of a contemporary resurgence in the genre. Horror today can feature A-list actors like Lupita Nyong'o (*Us*), Jessica Chastain (*IT Chapter Two*; 2019), and Toni Collette (*Hereditary*; 2018). The two installments of *IT* (2017 and 2019), adapted from Stephen King's 1986 bestseller, have been end-of-summer blockbusters that attract horror fans and genre newbies alike. A return to the *Halloween* franchise has re-energized the slasher film for this #MeToo moment. And *Get Out* inspired a course at UCLA (University of California, Los Angeles) called The Sunken Place: Racism, Survival, and Black Horror Aesthetic. Horror is undergoing a renaissance that harkens

> HORROR FILMS HAVE ALWAYS PLAYED WITH THE ANXIETIES THAT DOMINATE THEIR TIME

Us (2019).

back to the genre's golden age in the 1970s, when Gregory Peck starred in *The Omen* (1976) and *The Exorcist (1973)* was nominated for 10 (10!) Academy Awards. Now, like then, the house of horror is filled with movie stars, visionary directors, and socially relevant storytelling.

So why horror, and why now?

Well, today we're arguing about what we should fear and why. In the United States (still the nation with the most powerful film industry in the world), the present is characterized by a waning of popular consent to the social and political order. Familiar storylines are circulating that locate happiness with the status quo and demonize those who challenge it: good citizens menaced by migrants; fine men persecuted by militant feminists. These narratives draw on deep cultural scripts that make some of us into Others—outsiders who threaten ordinary people and their ordinary lives. And since the logic of otherness is the logic of monstrosity, we're already in the vicinity of the horror story. But those who are used to being cast as monsters are talking back. From anti-racism activists to gender-nonconforming people, to those who say #MeToo, Others are telling stories that locate fear and threat in everyday places. These are stories about how "normal" life can dissolve without warning, about how a walk or a workday can become, well, a horror show.

So, from one perspective, monsters are attacking the status quo. But from another perspective, the status quo *makes* monsters and then punishes them—us—for existing. Horror stories tend to operate between these perspectives, shuttling back and forth in ways that raise questions about the futures we want, the futures we fear, and what we mean by "we."

Horror films have always played with the anxieties that dominate their moment. During the Great Depression, films like *White Zombie* (1932) appropriated the zombie—a figure that belongs to Afro-Caribbean cosmologies and encodes the terrors of enslavement—to speak to Americans steeped in capitalist crisis. In the 1950s, space invasion films like *The War of the Worlds* (1953) channeled Cold War-era fears of Soviet infiltration. And in the 1960s, films like *Repulsion* (1966) and

It (2017).

The Omen (1976).

Barbarella (1968) explored the terrain of feminine sexuality opened up by the women's movement. Film posters for these titles and more are featured in the ROM's *It's Alive!* exhibition, which invites us to immerse ourselves in the visual grammar of horror storytelling: monsters and aliens, vixens and victims ... and everything in between.

It's fitting that this exhibition of classic horror art culminates in the 1970s, a moment not unlike our own. The seventies, too, were a time of dissent. Dominant ideas about American greatness were unraveling in the face of Vietnam and Watergate. And movements like Black Power and radical feminism were working toward total reorganizations of the social order. Assessing the role of horror in this context, film critic Robin Wood wrote that it was "in the 70s the most important of all American genres and perhaps the most progressive, even in its overt nihilism." The moral clarity of the early postwar period was long gone, and anxieties about young people as estranged versions of ourselves began making their way into the genre. Films like *The Exorcist* channeled bad feelings about the youth counterculture into the figure of the demonic child. As King put it, *The Exorcist* addressed "all those parents who felt, in a kind of agony and terror, that they were losing their children and could not understand why or how it was happening." Around this time, a new subgenre rife with murdered

> HORROR RISES TO THE SURFACE IN TIMES OF CULTURAL CRISIS BECAUSE DOMINANT IDEAS ABOUT WHAT'S "NORMAL" AND WHAT'S "GOOD" BEGIN TO FALTER

Get Out (2017).

Get Out (2017). Alamy Stock Photo.

teens also sliced its way into cinemas: the slasher film. So, young people were both punishing and punished in seventies horror—the sure sign of a culture with mixed feelings about its future.

Horror is good to think with in times of cultural crisis because ambivalence is its bread and butter. Wood offered this basic formula for a horror story: "Normality is threatened by the monster." But he went on to observe that we tend to be ambivalent about our monsters. The preteen protagonist of *The Exorcist* is repulsive; she vomits bile and pees in public and says things no one should say to their mother. She's revolting, but she's also, you know, *revolting*—a rebel bucking against feminine norms and father figures alike. Her transgressions are fascinating. And if we have mixed feelings about the monster, then we probably have mixed feelings about normality, too. If part of us wants the monster or identifies with its outsiderness, we might watch in horrified pleasure as it tears the world apart. This is what the genre offers: horrified pleasure, terrified excitement—grief, disgust, outrage, and wonder all at once. In the midst of all those unresolved feelings, there's room for the imagination to play.

Consider slasher films as a case study. Alfred Hitchcock's *Psycho* (1960) is widely acknowledged as a forerunner, but the slasher blueprint really solidified in the 1970s with films like *The Texas Chainsaw Massacre* (1974), the Canadian cult classic *Black Christmas* (1974), and the original *Halloween* (1978). On one level, these films, like many horror films, present white Christian heteropatriarchal families as the gold standard for goodness. In early slashers, teenagers die in an order determined by degrees of sexual promiscuity, and the girl left standing after the bloodbath—the one Carol Clover called the "Final Girl"—is a virgin. From this angle, slashers skew conservative: they enact a purifying ritual in which a girl on the cusp of acceptable white womanhood is spared from the slaughter. If we assume she's a future wife and mother, then her survival validates the white family and the good future it supposedly represents.

But what if we don't make that assumption? What if, instead, we notice the Final Girl has endured a steady stream of violence and terror despite doing everything right? She's a good girl, which is supposed to mean she's earned social and familial protection. That's the deal. But when a man-shaped nightmare lunges out of the dark, her white knights evaporate: Dad doesn't believe her; her boyfriend dies a bloody death; her neighbours assume she's pranking. From this angle, the Final Girl is a feminist. She's a survivor who now recognizes, if she didn't before, that the norms of white girlhood won't save her.

New slasher films are taking this insight to heart. An upcoming remake of *Black Christmas* promises that its badass sorority girls will, as the poster puts it, "slay." And last year, 40 years after the original *Halloween*, Jamie Lee Curtis reprised her role as one of the original Final Girls: Laurie Strode. Now pushing 60 years old, Laurie is a twice-divorced alcoholic who's waiting—training—for the return of a boogeyman. *Halloween* (2018) reminds us that Final Girls grow up—that after the credits roll, there are survivors transformed by trauma and alienated from a social and familial order that failed to protect them. In that respect, the Final Girl is a monster in the making.

She's not the only figure from the house of horror making a comeback these days. Pop culture critics like Sherronda Brown have pointed out that Peele's *Get Out* is a modern heir to the zombie horror subgenre. And while zombies themselves have been a horror staple for decades, *Get Out* brings back a figure unseen in Hollywood since the 1930s and '40s: the zombie master. Peele's zombie master is a rich white woman who uses a teacup to hypnotize her victims—black subjects whose bodies will be stolen by white people seeking immortality. With the return of the zombie master, the zombie is returned to its roots in histories of slavery and colonialism.

The horror genre has always been teeming with radical storytelling potential. It rises to the surface in times of cultural crisis because dominant ideas about what's "normal" and what's "good" begin to falter. When easy answers to complicated questions aren't as persuasive as they used to be, the terrain of horror storytelling expands. Fear becomes unstuck from the usual suspects, which means it might land somewhere new (a white woman and her teacup in *Get Out*). The lines dividing human and monster, us and them, begin to blur (a girl and her shadow in *Us*). Normality is exposed as a fantasy, a category that's policed because it doesn't exist. And when the norms we live by come into view as impossible fictions, well ...

That's when monsters come out to play. ◘

It's Alive! Classic Horror and Sci-Fi Art from the Kirk Hammett Collection is on display at the ROM until January 5, 2020.

Presenting sponsor: Cosmo Music

LIVING VAMPIRES

The vampire bat gets its name from shared traits with one of folklore's most feared monsters

BY **JOHAN EKLÖF** AND **JENS RYDELL**

Vampire bats don't eat solid food, nor do they drink water. They live solely on blood—a feat that has earned them considerable notoriety. In Latin America, the home of vampire bats, they have been part of myths and religion for at least one thousand years.

In Mexico's Classic Veracruz civilization, human sacrifice was an important ritual involving a bat god and performed by men wearing vampire-bat suits. Camazotz, the "death bat," was a bat god in the Popol Vuh, a highland Mayan creation story about the underworld and the escapades of the Hero Twins in the House of Bats. Camazotz bites the head off one of the twins and uses it in a ball game.

Vampire bats are also a symbol of fertility and rebirth. In a creation myth from Costa Rica, the earth came to life after a vampire bat drank blood from a young jaguar; the nourishment of the blood made the first plants grow. In Brazilian folklore, the tobacco plant belongs to the vampire bats and anyone treating tobacco disrespectfully will instantly be turned into an otter.

Vampire bats were unknown in the Old World until Spanish conquistadors returned home and told about them. They had seen not only vampire bats but also natives dressed in bat cloaks, and stories of blood-sucking bats and bat myths quickly spread in Europe. Conrad Gessner, the father of modern zoology, was among the first to describe vampire bats in a scientific context in the 16th century, but bats were still considered birds at that time.

Two centuries later, when Carl von Linné set out to name all plants and animals, he gave several bat species the name "vampire"— especially ones he found big and scary. These included the large flying fox (*Pteropus vampyrum*), one of the world's largest bats from Southeast Asia, and the great false vampire bat (*Vampyrum spectrum*) from the jungles of Latin America.

The vampire myth is much older than the knowledge of vampire bats among Europeans; in fact, it is about as old as human civilization. The oldest written evidence was found in Assyria in the form of a 4,000-year-old magic spell meant to protect children from the evil of vampires. But with few exceptions,

HOW TO SEE IT

BLOODSUCKERS: LEGENDS TO LEECHES

ON UNTIL March, 22, 2020

Garfield Weston Exhibition Hall

Cama Zotz, the Death Bat.

Different editions of Bram Stoker's Dracula including the first 1897 edition (top left).

early vampire stories have little to do with bats. In folklore, blood-sucking monsters could be anything from strange shadows and undead people to witches and wolves. It was not until the 19th century that bats and vampires became one.

Vampire stories became popular in European literature in the 19th century, starting with poems such as Robert Southey's epic *Thalaba the Destroyer* (1801) and John Stagg's "The Vampyre" (1810). In early stories, vampires had nothing to do with bats, but the two were merged in Arthur Young's "Pepopukin in Corsica" (published in *The Stanley Tales* in 1826). Vampires got wings and could fly; they had become bats. The image of vampires as bats was strong and spread quickly through so-called penny dreadfuls—cheap, short-story literature. When Bram Stoker wrote his famous novel *Dracula* (1897), he is said to have had newspaper articles about vampire bats among his research notes. From that moment, bats and vampires have been almost synonymous.

Vampire bats—the real vampires—represent only three of the world's 1,300 bat species, and live in caves or hollow trees in South and Central America. They are medium-sized, weighing 20–40 grams, and so are far smaller than most fictional vampires. Most Pre-Columbian bat depictions, such as Camazotz, resemble the leaf-nosed bats, close relatives of the vampires.

The three vampire species include the white-winged vampire bat (*Diaemus youngi*), the hairy-legged vampire bat (*Diphylla ecaudata*), and the common vampire bat (*Desmodus rotundus*). Generally, the first two species feed on bird blood, while common vampire bats prefer large mammals, such as domestic pigs, cattle, and an occasional human. How the blood-feeding evolved is unknown, but one possibility is that it originated in bats eating blood-filled ectoparasites, such as ticks, or insects found on wounds on large animals.

With the expansion of rural areas, the abundance of vampire prey such as cows, pigs, and horses has increased, and the common vampire in particular has become common indeed. In turn, this led to rabies outbreaks spread among cattle by vampires. However, this problem has diminished considerably since many farm animals are now vaccinated against rabies.

BATS AS CHARMS, CURES, AND CURSES

Starting in the Middle Ages, the Catholic Church associated bats with the Devil, and during the Renaissance, carved and artistically rendered bats symbolized melancholy and intellectual darkness. In many parts of the world, bats are associated with ghosts, souls, and even dreams, and in folklore they are used in potions and spells. In China, bats are good-luck charms. In Scandinavian mythology, bats produce only three drops of blood, but these precious drops possess magic properties beneficial in matters such as love affairs, hunting, and fishing. Bats are also incorporated in traditional medicine; in China and Europe, their blood and droppings have been used to treat everything from colds to blindness.

The Genius of Evil, Guillaume Geefs, 1848.

Desmodus rotundus

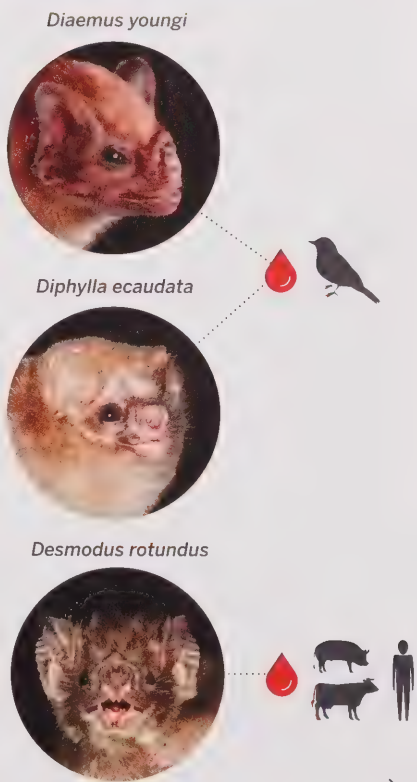
Vampire bats have a special substance in their saliva called "draculin," which now forms the active ingredient of a drug designed to dissolve blood clots.

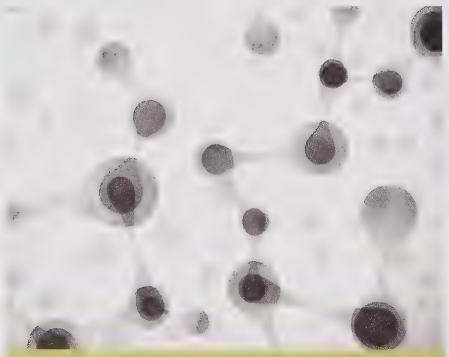
Vampires leave the day roost soon after dusk to go hunting. All senses are used on the hunt, including their ears, which help to detect and identify the breathing sounds of an animal in deep sleep. Vampires also possess a heat receptor, which is unique among mammals. It is located around the nose pad and helps the vampire to find a suitable vein to bite. When the vampire has located an animal target, it lands on the ground and approaches the animal by hopping along on its feet. It can also crawl along the underside of branches to reach the feet and legs of sleeping birds. The vampires have a very short tail membrane, which facilitates terrestrial movements such as running and climbing.

After climbing the prey, the bat cuts away some fur and bites a 3-4 mm hole in the skin with its razor-sharp front teeth and starts licking. Grooves on the underside of the tongue facilitate the ingestion. Also, to thin the blood and promote flow, vampire bats have a special substance in their saliva called "draculin," which now forms the active ingredient of a drug designed to dissolve blood clots. Normally, its victim notices nothing and continues sleeping, which is fortunate for the bat as it can take nearly 20 minutes to ingest the two tablespoons of blood its stomach can hold. Blood consists mainly of water, and almost directly after settling down to drink, the vampire bat starts to urinate, ridding itself of unnecessary weight and maximizing its nutrient intake.

After feeding, the vampire bat has added as much as 60 percent of its weight in blood. To be able to take to the air, it pushes off with its well-developed thumbs and feet and flies back to its colony to settle down and digest. Vampire bats do not need to feed

VAMPIRE BAT SPECIES





SEQUENCING VAMPIRE BAT DNA

BY **BURTON LIM**

Vampire bats have many unique adaptations that make them the only mammals that are obligate blood feeders. A key factor is the presence of anticoagulants in their saliva. Burton Lim, Assistant Curator of Mammalogy at the ROM, and Maddy Foote, a recent Master of Science graduate, have applied to Canada's Genomics Enterprise to sequence the complete genome (approximately two billion DNA sequences) of two species of vampires that prey primarily on birds, in order to study the evolution of the enzymatic proteins involved in their specialized diet. The genome of the common vampire bat (*Desmodus rotundus*), which consumes mainly mammalian blood, was sequenced last year by a lab in Denmark. Of the more than 1,400 species of bats, only three are sanguivores (blood feeders), and they occur in tropical Central to South America.

They are also researching the potential discovery of a fourth vampire-bat species. During fieldwork in 2014, Lim and his Peruvian colleagues caught one from the poorly studied dry Pacific coast of South America. Preliminary genetic analysis has identified it as a population distinct from others in Central America and South America east of the Andes. To confirm this difference, Lim and his colleagues are collaborating with researchers in Chile to acquire samples to test the extent of variation at the southern extreme of its distribution.

Genomic-level data will help in finding the origins of the genes responsible for stopping the clotting of blood and provide insights into the evolution and biodiversity of vampire bats. Were these anticoagulant proteins already present in their most recent common ancestor, which enabled sanguivory? Or are they a more recent adaptation to a diet of blood-feeding on birds and mammals?

Colony of the Common Vampire Bat (*Desmodus rotundus*) in a limestone cave.

more than once every night but cannot live more than a few days without a blood meal. A well-developed, altruistic social structure is vital to their survival. Bats returning home after a successful hunt share their food with their less successful fellows by regurgitating some of the blood. Their generosity is then rewarded the next time they are in need.

A well-developed, altruistic social structure is vital to the vampires' survival.

Consequently, they keep a close eye on each other, making mental notes of the sharing members of the colony while ostracizing the selfish. Like many other bats, vampires can reach an age of 20 years or more in the wild, and colonies—mainly one male and several females with pups—stick together for many years and regularly engage in grooming and chit-chatting. They may also hunt together, feeding in the same area or sometimes even from the same wound. Also, young vampires are cared for longer than other bats—up to nine months—probably due to the high risks of blood feeding.

Ever since their discovery and the vampire boom in Europe, bats in the shape of vampire monsters have been a crucial part of Halloween, horror movies, and gothic literature. Although vampire bats—at least the common vampire bat—are among the most well-studied bats, we have still much to learn. Their intriguing social structure, specialized senses, and above all, their ability to feed solely on blood, continues to trigger our collective imagination. ◘

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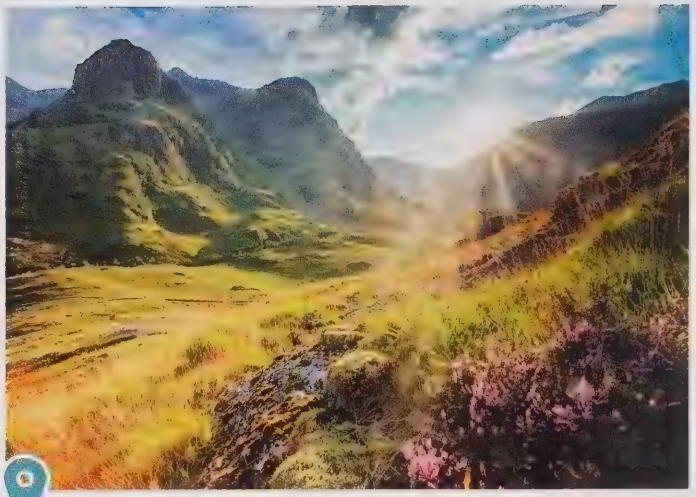

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Sail from Glasgow to Aberdeen to discover the misty and enchanting northern Scottish isles.

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Enjoy Spain's vibrant modern cities and its ancient Roman and Moorish past.

MAY 2022

ROMBus

A Taste of Indian and Sri Lankan Culture and Textiles
Saturday, November 16, 2019, 9 a.m. to 5 p.m.
Meet at the ROM, President's Choice School Entrance.

Visit the striking BAPS Shri Swaminarayam Mandir Temple, roam the Gerrard Street India Bazaar, and cap the evening off at the Mahavihara Buddhist Meditation Centre Monastery.

Cross-Cultural Christmas Traditions
Saturday, December 7, 2019, 9 a.m. to 5 p.m.
Meet at the ROM, President's Choice School Entrance.

Enjoy a cup of mulled cider at the James Cathedral Nancy Mallet Archives and Museum and end the tour with contemporary Toronto traditions at the Holiday Fair in Nathan Phillips Square.

ROMBus trips involve a lot of walking and stairs, so please wear comfortable shoes. Notify the Programs Department at **416.586.5797**, at least three weeks in advance of the trip date, of any special dietary needs or mobility issues.

THE GIVING SEASON

Every gift makes a difference

With the recent addition of the Helga and Mike Schmidt Performance Terrace and the Reed Family Plaza, the ROM is an extra welcoming and inviting place for people to meet and relax in the heart of the city.

It was terrific to see hundreds of visitors and passersby enjoy special outdoor programming and performances throughout weekends in September. These great spaces continue to be filled with people each and every day—sitting, connecting, enjoying their lunch or a cup of coffee—making it clear that the ROM experience now begins on Bloor Street before you even step into the Museum.

Like many other important initiatives and special projects at the ROM, these stunning new outdoor spaces were entirely funded by philanthropy and made possible by the visionary partnership and generosity of donors. As you'll read on pages 36–37, lead donors Helga Schmidt and Nita and Don Reed embody the spirit of philanthropy—a genuine love for making things more beautiful and better for all.

As a place committed to transforming lives by helping people understand the past, make sense of the present, and come together to shape a shared future, the ROM relies on its valued donors, sponsors, and volunteers to make a difference in our community.

Your generous support of the ROM enables engaging exhibitions, public programs, and curatorial research to come to life for our diverse and growing audiences. I hope you will consider making a special gift to the ROM this holiday season (every amount has an incredible impact!) and delight in many magical moments at the Museum with family and friends.

Susan

SUSAN HORVATH
PRESIDENT & CEO
RPC CHAMPION

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GOLFERS GIVE BACK

Special thanks to our top sponsors Semple Gooder Roofing Corporation and Century Management, and to our many generous partners, participants, and committee members for making the fourth annual ROM Classic Golf Tournament a huge success! **Together, we raised $132,308 net in support of the ROM.**

BECOME A ROM CORPORATE MEMBER

Corporate membership at the Museum offers a variety of exciting experiences for employees and clients, special privileges, and unique benefits, including free admission, exhibition previews, and behind-the-scenes tours. Support from our corporate community is vital to the ROM's ability to offer world-class exhibitions and public programs.

Visit **rom.on.ca/corporatemember** or contact **corporate@rom.on.ca** or **416.586.5736** for more information.

PHILANTHROPY BRINGS ART, CULTURE, NATURE TO LIFE

On August 21, the ROM celebrated the official opening of the Helga and Mike Schmidt Performance Terrace and the Reed Family Plaza to the public, offering a new way for visitors to enjoy the Museum. These beautiful new spaces feature a welcoming place to gather with garden-side seating and an open-air space for music, theatre, discussion, and performances. The revitalization project was generously made possible by lead donors Helga Schmidt and her late husband Mike Schmidt, and Nita and Don Reed. Additional generous donations were made by Hatch, Nancy Lockhart and the late Murray Frum, Richard Wernham and Julia West, and Flavia Redelmeier.

"Building community, ensuring accessibility, and playing a meaningful role in people's lives are key elements of our enduring success," says Josh Basseches, ROM Director & CEO. "The opening of the Helga and Mike Schmidt Performance Terrace and the Reed Family Plaza not only enhances the pedestrian experience along Bloor Street, it also provides new ways to deepen the ROM's connection with our community and participate in the urban life of the city. Thanks to the generosity of our donors, visitors now have a new and inviting civic space to enjoy in the heart of Toronto. We are very grateful to Helga and Mike Schmidt and Nita and Don Reed for making this important project possible."

Designed by Toronto architect Siamak Hariri, the Bloor Street exterior has been reimagined and transformed into 13,595 square feet of outdoor public space, anchored by landscaping and architectural design. Set back from the street on an elevated platform, the Helga and Mike Schmidt Performance Terrace is surrounded by the greenery of Philosopher's Walk, the striking contemporary architecture of the Michael Lee-Chin Crystal, and the softly textured stone walls of the ROM's heritage facade. Garden beds and plantings dot the Reed Family Plaza, drawing pedestrians in and offering an oasis from the hustle and bustle of Bloor Street.

"We are so thankful to our donors for their visionary partnership and generous support in realizing this important project for the ROM," says Susan Horvath, President & CEO of the ROM Governors. "Like so many transformative city-building initiatives, donors were at the heart of this one at the Museum."

"Supporting a beautiful outdoor performance space at the Museum is a dream come true," says Helga Schmidt, philanthropist and ROM supporter. "My late husband would have been very proud of this moment, which honours our shared love of music and live performance."

"Our family is very pleased to support the ROM's new vision for community engagement with the Reed Family Plaza," says Nita Reed, long-time ROM donor and volunteer. "It's a thrill to see it come to life as a dynamic gathering space along Bloor Street."

Top: Helga Schmidt with her grandchildren. **Middle row:** Nancy Lockhart and Josh Basseches. Nita and Don Reed (centre) with Jeff Willner, Susan Horvath, Josh Basseches, and Martha Durdin (left to right). **Bottom row:** Flavia Redelmeier with her son, Hugh Redelmeier, and Josh Basseches, Susan Horvath, Jeff Willner, and Martha Durdin. Michael Schatz, John Bianchini, and Glenn Sakaki from Hatch.

ONE IN FOUR SCHOOL VISITS MADE POSSIBLE BY DONORS

Each year, more than 100,000 students engage with the ROM through our School Visits Program, where they discover captivating collections that inspire them to think more critically about the intersecting worlds of art, culture, and nature.

This past year, the generosity of the Bennett Family Foundation, Canada Life, KPMG, Linamar, Mandarin Restaurants, Nordstrom, Ada Slaight, and the Weinberg Family Foundation enabled more than 26,075 students from across the province to experience ROM learning. This critical program connects children and youth with hands-on and multisensory learning programs, preparing tomorrow's leaders to successfully navigate a future in constant motion.

By subsidizing the cost of bus transportation, guided tours of galleries, and hands-on learning labs, ROM partners invigorate students' understanding of the Ontario curriculum. And through their support of informal learning at the ROM, partners foster deeper engagement across subjects that span history, culture, art, and science. For instance, guided tours of the exhibitions *Spiders: Fear & Fascination* and *Zuul: Life of an Armoured Dinosaur* gave schoolchildren a highly interactive exploration of the incredible diversity of living (and some now extinct) species.

By expanding opportunities for young people to apply the concepts and materials taught in classrooms to real-world phenomena, as brought to life by the ROM's collections, school visits cultivate future generations of change makers and actively engaged citizens. This lasting impact is grounded in the meaningful connections students make at their Museum, inviting them to apply their creativity and new knowledge to solve local and global challenges.

Established in 2005, the School Visits Program—through the ongoing support of our partners—has made more than 232,000 student visits to the ROM possible.

SUPPORT

To learn how you can support the School Visits Program, please contact Tatiana Leiningen at **tleiningen@rom.on.ca** or **416.586.5736**.

Photo by Jesse Milns.

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ROYAL ONTARIO MUSEUM GOVERNORS

Bloodletting 101

A closer look at the dubious medical practice from the early 19th century

{1} European Medicinal Leeches *Hirudo medicinalis*

{2} Twelve blade scarificator and case

{3} Three-bladed veterinary fleam

{4} Cupping Set

{5} Bleeding bowl

{6} Lancet case with thumb lancets

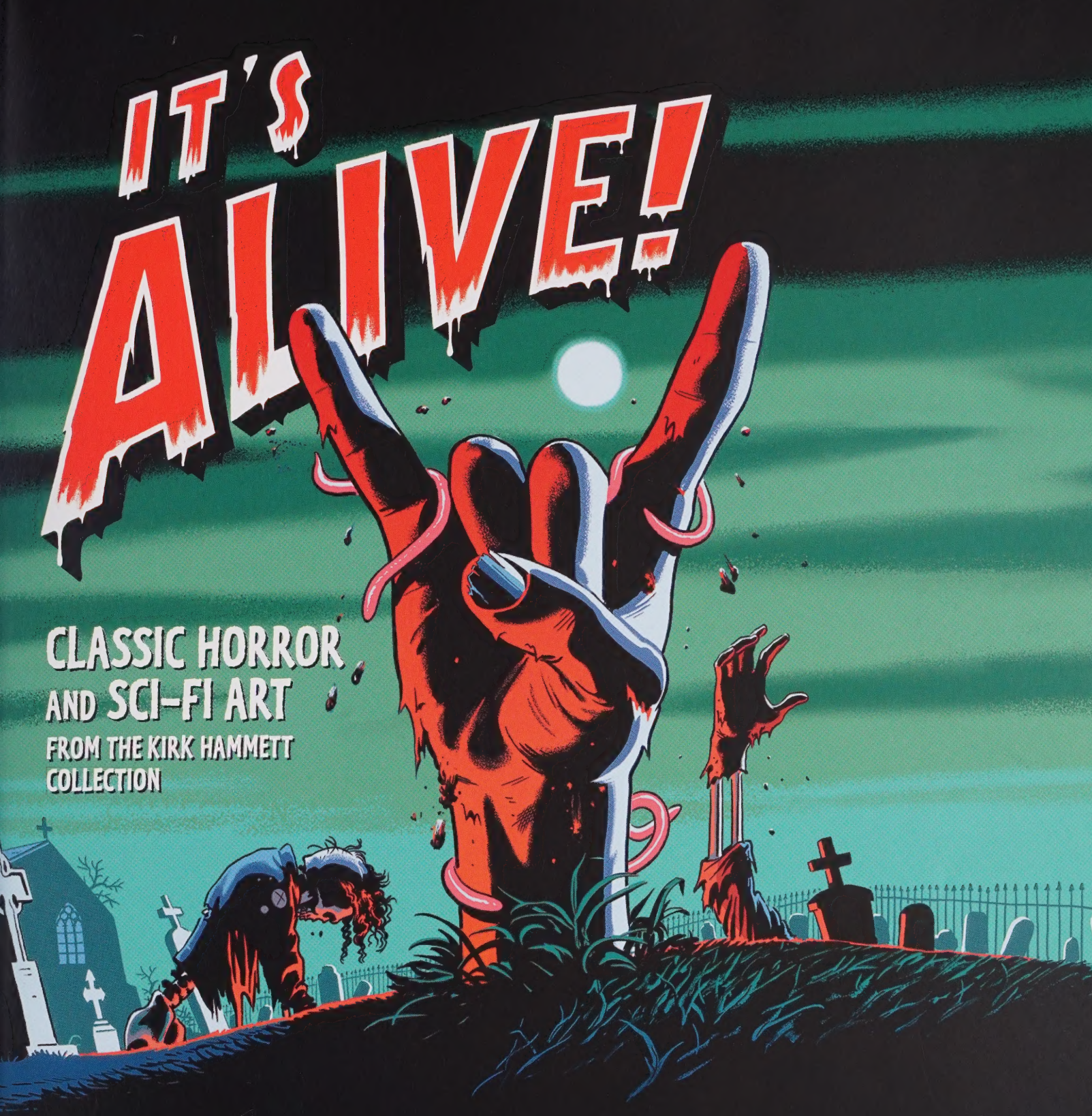
{7} Lancet cases with thumb lancets

Bloodletting for medical cures can be traced as far back as 3,000 years ago. In Ancient Greece, it was thought that disease stemmed from an imbalance in one or more of the body's four basic humours (blood, black bile, yellow bile, and phlegm), leading to the popularity of exsanguination as a medical remedy.

The practice became common in the late 18th and early 19th centuries, and a variety of tools were employed–from needles to lancets to specially designed scarificators that would spring multiple blades for venesection with the touch of a button. At one point in the 19th century, France and England were importing millions of leeches for medical treatments.

Eventually, with the advancement of scientific studies, the practice of bloodletting fell out of favour. Today, the *Hirudo medicinalis* is an FDA-approved species of leeches recommended more for the anticoagulant nature of its saliva than its bloodsucking attributes.

Photograph by Tina Weltz.



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It's Alive! Classic Horror and Sci-Fi Art from the Kirk Hammett Collection is organized by the Peabody Essex Museum, Salem, Massachusetts.
Image credit: R. Kikuo Johnson, *Rock On*, 2017. © 2017 Peabody Essex Museum. The ROM is an agency of the Government of Ontario.

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WILDLIFE PHOTOGRAPHER OF THE YEAR

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